

REMARKS

Claims 1 through 8, 12 through 15, 18 and new Claims 19 and 20 are pending in the application.

Claims 1 and 13 have been amended to emphasize that the liquid smoke is absorbed by polyamide and/or copolyamide layer within the inventive casings. Support for this amendment can be found in the Application-as-filed, for example on Page 4, lines 21 through 24.

Claims 19 and 20 have been added to complete the record for examination and highlight advantageous embodiments of the invention.

Claim 19 is directed to advantageous embodiments in which the single-layer polymer or inner layer polymer comprises other than heterofunctional polyamide. Support for this amendment can be found in the Application-as-filed, for example on Page 5, lines 10 through 12.

Claim 20 is directed to expedient embodiments in which the single-layer polymer or the inner layer polymer consists of aliphatic polyamide optionally blended with at least one partially aromatic (co)polyamide other than heterofunctional polyamide. Support for this amendment can be found in the Application-as-filed, for example on Page 5, lines 3 through 19.

Reexamination and reconsideration of this application, withdrawal of all rejections, and formal notification of the allowability of the pending claims are earnestly solicited in light of the remarks which follow.

The Claimed Invention is Patentable

in Light of the Art of Record

Claims 1 through 8, 12 through 14 and 18 stand rejected over United States Patent No. 4,897,295¹ to Erk et al. ("US 295") and WIPO International Publication WO 97/36798 ("WO 798") to Beckwith et al. as evidenced by United States Patent No. 5,399,427 ("US 427") to Stenger et al. Claim 15 stands rejected in light of the foregoing references and further in light of United States Patent No. 4,377,187 ("US 187") to Chiu.

It may be useful to briefly consider the invention before turning to the merits of the rejection.

Applicants respectfully reiterate that smoked foodstuffs have long been known. Historically, foods have been smoked by hanging in a smoking chamber, in which the food is smoked within a cloud of smoke, such as smoke rising from burning wood and the like.

Attempts have been made to smoke foodstuffs without resort to a smoking chamber, as evidenced by the newly cited secondary reference, US 187, directed to cellulosic smoke transport casings. Unfortunately, it is quite difficult to incorporate a sufficient amount of smoke flavoring and coloring into synthetic polymer food casings for subsequent transfer into the foodstuff. Heretofore known synthetic polymeric smoke transport casings must be stored in contact with the smoke coating in a sealed bag or the like for an extremely long period of time, such as the 5 to 10 days noted within US 502, prior to stuffing. Even with such extended soak times, heretofore known casings further contain additional excipients to mimic the effects imparted by real smoke within a smoke chamber, such as the browning agent of US 502.

¹ Applicants respectfully submit that cited USPN 4,897,298 is to Ottawa et al. Applicants thus respectfully assume that USPN 4,897,295 to Erk was intended instead. Out of an abundance of

Applicants have found that casing layers formed from wettable, at least moderately swellable polymers that are of sufficient thickness can absorb quite elevated amounts of liquid smoke that is used to impart a smoky flavor and dark coloration to foodstuffs, such that the heretofore known extended smoke coating soak times and browning agents are no longer required.

Applicants have more particularly found that liquid-smoke-impregnated, tubular, single-layer or multilayered food casings comprising a single-layer which is based on polyamide and/or copolyamide alone, or comprising an inner layer based on polyamide and/or copolyamide alone, in which the inside of the casing has a surface energy of greater than 35 dyn/cm that further have a swelling value of at least 10 % may readily be impregnated on the inside with liquid smoke, such that an additional browning agent is not required and the liquid smoke is absorbed by the polyamide and/or copolyamide, as recited in Claim 1 as-amended.

In especially advantageous embodiments, the inventive food casings incorporate polyamide and/or copolyamide alone as a sole or inner layer having a surface energy of greater than 35 dyn/cm and either a single-layered thickness of 50 to 130 μm or a polyamide inner layer thickness of 15 to 27 μm in which the casing or the polyamide inner layer of the casing has a swelling value of at least 10 wt % and the foregoing properties permit the impregnation of the casing with liquid smoke in the absence of an additional browning agent and further without a liquid smoke application time of at least 5 days, such that the liquid smoke is absorbed by the polyamide and/or copolyamide, as recited in Claim 13 as-amended.

In beneficial aspects, the single-layer polymer or inner layer polymer comprises other than heterofunctional polyamide, as recited in newly added Claim 19.

caution, Applicants respectfully submit that the elastomeric laminates of USPN 4,897,298 do not teach or suggest the claimed invention.

Expediently, the single-layer polymer or the inner layer polymer consists of aliphatic polyamide optionally blended with at least one partially aromatic (co)polyamide other than heterofunctional polyamide, as recited in newly added Claim 20.

Applicants respectfully submit that the claimed invention is patentable in light of the cited references, considered either alone or in combination.

In contrast to the claimed liquid-smoke-impregnated casings, US 295 is merely directed to sausage casings that avoid tightening lubricating agents and moisture retaining agents. (Col. 2, lines 62 – Col. 3, line 2). In that regard, US 295 expressly states that its casings contain “no additional additives,” other than water. (Col. 5, lines 28 – 31). US 295 indicates absorption of up to 8 % water for polyhexamethylene adipamide. (Col. 5, lines 15 – 18). US 295 further indicates that storage time may be used “to ensure the even distribution of the water” within the casing walls. (Col. 6, lines 1 – 5).

US 295 thus does not teach or suggest inventive liquid-smoke-impregnated food casings, much less that casings incorporating polyamide or co-polyamide alone which further exhibit a surface energy of at least 35 dyn/cm may be impregnated on the inside with liquid smoke, and most certainly not such liquid-smoke-impregnated food casings that are not subjected to a 5 day soak time, as recited in the claimed invention.

As correctly alluded to by the Examiner in the outstanding Office Action at Ref. No. 7, US 295 also fails to teach or suggest liquid smoke absorbed by polyamide and/or copolyamide, as further recited in the claims as-amended.

Accordingly, Applicants respectfully reiterate that the claimed invention is patentable in light of US 295, considered either alone or in combination with any or all of the remaining art of record.

WO 798 is directed to packaging films for cook-in processes that transfer a modifier to a

food product. (Page 1, lines 5 – 10). WO 798 indicates that packaging films are well known in the art, and suitable for sliced luncheon meat and the like. (Page 1, lines 11 – 22). The films of WO 798 incorporate a food-contact layer that includes a copolymer with a modifier retained therein. The copolymer includes segments that are substantially insoluble in water and other segments that are substantially hygroscopic. (Page 3, lines 25 – 30 and Page 4, lines 11 - 18). Particularly, the food contact layer includes a copolymer having mer units derived from at least two co-reactants. The first co-reactant is capable of homopolymerizing to a material which is substantially water insoluble while the second co-reactant is capable of homopolymerizing to a material which is substantially hygroscopic. (Page 8, lines 3 – 7). The two parts are noted to be inseparable parts of the same polymer. (Page 8, lines 11 – 13). The hygroscopic segment of the copolymer is said to sorb and retain at least some of the modifier. (Page 8, lines 16 – 17). Exemplary hygroscopic segments include any of a laundry list of segments, including cellulose and saccharides. (Page 10, lines 10 – 24). The hygroscopic segments can be present in amounts of up to about 99 wt %. (Page 9, lines 12 – 13). The water-insoluble segments of the copolymer prevent the food-contact layer from being solubilized and “do not themselves solvate.” (Page 8, lines 27 – 29). Exemplary water-insoluble segments include amides, preferably nylon 6, nylon 6/6 and the like. (Page 9, lines 24 – 29). Exemplary modifiers include “substances that can change the odor, color, taste, texture, etc., of a packaged product. (Page 13, lines 28 – 29).

As noted by the Examiner in the outstanding Office Action on Page 13 at line 7, WO 798 does disclose that the surface energy of the food contact layer can be increased by corona treatment or by including a polar additive. In that regard, Applicants respectfully submit that WO 798 does not provide a range for the proportion of such surface-energy additive, and one skilled in the art would presume that the proportion of the additive is small. Furthermore, WO 798 does not teach or suggest that such surface-energy additive is suitable for absorbing liquid smoke, but instead expressly teaches that amides do not solvate and that hygroscopic segments (formed from far different materials) absorb the liquid smoke.

WO 798 thus does not teach or suggest that casings incorporating polyamide or copolyamide alone which further exhibit a surface energy of at least 35 dyn/cm may be impregnated

on the inside with liquid smoke, and most certainly not such liquid-smoke-impregnated food casings that are not subjected to a 5 day soak time, as recited in the claimed invention.

Although teaching absorption within the hygroscopic portion of its food-contact layer, WO 798 does not teach or suggest liquid smoke absorbed by polyamide and/or copolyamide alone, as further recited in the claims as-amended. WO 798 instead teaches away from such absorption by expressly teaching that the water-insoluble segments, e.g. amides, do not solvate.

Nor does WO 798, requiring both hygroscopic and water-insoluble segments, teach or suggest such casings in which the single-layer polymer or the inner layer copolymer is other than heterofunctional polyamide, as recited in newly added Claim 19. In fact, Applicants respectfully submit that to modify WO 798 so as to avoid its required hygroscopic segment would altogether change its principle of operation.

WO 798 likewise fails to teach or suggest such casings in which the single-layer polymer or the inner layer polymer consists of aliphatic polyamide optionally blended with at least one partially aromatic (co)polyamide other than heterofunctional polyamide, as recited in newly added Claim 20.

Accordingly, Applicants respectfully reiterate that the claimed invention is patentable in light of WO 798, considered either alone or in combination with any or all of the remaining art of record.

In contrast to the recited liquid-smoke-impregnated food casings, US 427 is directed to films formed from polyolefin blends with improved UV barrier. US 427 initially discloses that nylon is thought to provide “unsteady” stretching behavior. (Col. 2, lines 12 – 26). The impetus of US 427, considered in its entirety, is thus the formation of single-layered films from a mixture of polyamide, polyolefin and pigment. (Col. 3, lines 24 – 34). The polyolefin is present in amounts ranging from about 5 to 30%. (Col. 4, lines 59 – 61). US 427 touts that its films have a “relatively low” thickness in comparison to “conventional sausage casings made of polyamide,”

preferably ranging from about 25 to 40 microns. (Col. 6, lines 2 – 5). US 427 includes a Comparative Example formed from a film having a thickness ranging from 39 to 41 μm . (Col. 7, Comp. Ex. 1). US 427 is silent as to swelling values and surface energy of its films.

Applicants respectfully reiterate that US 427 does not teach or suggest the recited liquid-smoke-impregnated food casing, much less such casings having either a single layer or inner layer formed from polyamide alone, and most certainly not liquid-smoke-impregnated food casings that do not require a 5 day soak time, as recited in the claimed invention. US 427 is instead directed to improved UV barrier properties imparted by a polyolefin blend. Applicants further respectfully submit that to modify US 417 so as to avoid its required polyolefin would render it unfit for its intended purpose.

US 427 thus cannot teach or suggest such casings in which the single-layer polymer or the inner layer polymer consists of aliphatic polyamide optionally blended with at least one partially aromatic (co)polyamide other than heterofunctional polyamide, as recited in newly added Claim 20.

Accordingly, Applicants respectfully reiterate that the claimed invention is patentable in light of US 427, considered either alone or in combination with the remaining art of record.

Applicants respectfully submit that there would have been no motivation to have combined US 295, WO 798 and US 427. US 295 is directed to sausage casings avoiding tightening lubricating agents and moisture retaining agents containing “no additional additives.” WO 798 is directed to films incorporating a copolymer containing both hygroscopic and water-insoluble segments. US 427 is directed to UV-resistant food casings formed from a polyolefin blend. These are also altogether different problems solved.

However, even if one had combined US 295, WO 798 and US 427 (which they did not), the claimed invention would not result.

Applicants respectfully submit that the combination of US 295, WO 798 and US 427, would, at best, have resulted in a casing incorporating polymer having hygroscopic segments. This conclusion is based on the fact that the only cited reference relating to transport, WO 798, clearly teaches that hygroscopic mers are required within transport films. In that regard, Applicants respectfully submit that the references must be considered in their entirety for all that they teach.

The combination simply does not teach or suggest that casings incorporating polyamide or co-polyamide alone which further exhibit a surface energy of at least 35 dyn/cm may be impregnated on the inside with liquid smoke, and most certainly not such liquid-smoke-impregnated food casings that are not subjected to a 5 day soak time, as recited in the claimed invention.

And the combination most certainly does not teach or suggest such casings in which the liquid smoke is absorbed by the polyamide and/or copolyamide alone, as further recited in the claims as-amended. US 295 is not directed to transport casings. WO 798 teaches away from the recited absorption by polyamide and/or copolyamide alone by expressly teaching that the water-insoluble segments, e.g. amides, do not solvate. US 427, likewise not directed to transport casings, requires polyolefin within its polymer blend.

Nor does the combination teach or suggest such smoke transport casings in which the single-layer polymer or the inner layer copolymer is other than heterofunctional polyamide, as recited in newly added Claim 19. WO 798 instead requires both hygroscopic and water-insoluble segments within its food contact layer. US 295 and US 427 are both silent as to transport films, and hence cannot teach suitable transport layer compositions.

The combination likewise fails to teach or suggest such casings in which the single-layer polymer or the inner layer polymer consists of aliphatic polyamide optionally blended with at least one partially aromatic (co)polyamide other than heterofunctional polyamide, as recited in newly added Claim 20. US 295 does not teach or suggest transport films. WO 798 requires a

hygroscopic moiety within its food-contact layer. US 427 requires a polyolefin blend within its UV barrier film.

Accordingly, Applicants respectfully submit that the claimed invention is likewise patentable in light of US 295, WO 798 and US 427, considered either alone or in any combination.

Claim 15 is likewise patentable in further light of US 187.

US 187 is solely directed to cellulosic casings, particularly cellulosic casings having sufficient antimycotic quality to be free of mold growth without the use of an added agent. (Col. 4, lines 1 – 6). The cellulosic casings are impregnated with a wood-derived liquid smoke including color, odor and flavor constituents. (Col. 4, lines 23 – 27). The working examples are formed from fibrous reinforced cellulose casings. (Col. 15, lines 55 – 60).

US 187, solely directed to cellulosic casings, thus does not teach or suggest that casings incorporating polyamide or co-polyamide alone which further exhibit a surface energy of at least 35 dyn/cm may be impregnated on the inside with liquid smoke, and most certainly not such liquid-smoke-impregnated food casings that are not subjected to a 5 day soak time, as recited in the claimed invention.

Nor does US 187 teach or suggest liquid smoke absorbed by polyamide and/or copolyamide alone, as further recited in the claims as-amended.

US 295, WO 798 and US 427 do not teach or suggest the claimed invention, based upon the reasoning provided above.

Applicants respectfully submit that there would have been no motivation to have combined US 295, WO 798, US 427 and US 187. US 295 is directed to sausage casings avoiding tightening lubricating agents and moisture retaining agents containing “no additional additives.” WO 798 is directed to films incorporating a copolymer containing both hygroscopic

and water-insoluble segments. US 427 is directed to UV-resistant food casings formed from a polyolefin blend. US 187 is directed to antimycotic cellulose casings. These are also altogether different problems solved.

However, even if one had combined US 295, WO 798, US 427 and US 187 (which they did not), the claimed invention would not result.

The combination simply does not teach or suggest that casings incorporating polyamide or co-polyamide alone which further exhibit a surface energy of at least 35 dyn/cm may be impregnated on the inside with liquid smoke, and most certainly not such liquid-smoke-impregnated food casings that are not subjected to a 5 day soak time, as recited in the claimed invention.

And the combination most certainly does not teach or suggest such casings in which the liquid smoke is absorbed by the polyamide and/or copolyamide alone, as further recited in the claims as-amended. US 295 is not directed to transport casings. WO 798 teaches away from the recited absorption by polyamide and/or copolyamide alone by expressly teaching that the water-insoluble segments, e.g. amides, do not solvate. US 427, likewise not directed to transport casings, requires polyolefin within its polymer blend. US 187 teaches cellulosic casings.

Nor does the combination teach or suggest such smoke transport casings in which the single-layer polymer or the inner layer copolymer is other than heterofunctional polyamide, as recited in newly added Claim 19. WO 798 instead requires both hygroscopic and water-insoluble segments within its food contact layer. US 295 and US 427 are both silent as to transport films, and hence cannot teach suitable transport layer compositions. US 187 teaches cellulosic casings.

The combination likewise fails to teach or suggest such casings in which the single-layer polymer or the inner layer polymer consists of aliphatic polyamide optionally blended with at least one partially aromatic (co)polyamide other than heterofunctional polyamide, as recited in newly added Claim 20. US 295 does not teach or suggest transport films. WO 798 requires a

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hygroscopic moiety within its food-contact layer. US 427 requires a polyolefin blend within its UV barrier film. US 187 teaches cellulosic casings.

Accordingly, Applicants respectfully submit that Claim 15 and newly added Claims 19 and 20 are likewise patentable in light of US 295, WO 798, US 427 and US 187, considered either alone or in any combination.

CONCLUSION

It is respectfully submitted that Applicants have made a significant and important contribution to the art, which is neither disclosed nor suggested in the art. It is believed that all of pending Claims 1 through 8, 12 through 15, and 18 through 20 are now in condition for immediate allowance. It is requested that the Examiner telephone the undersigned if any questions remain to expedite examination of this application.

It is not believed that extensions of time or fees are required, beyond those which may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time and/or fees are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required is hereby authorized to be charged to Deposit Account No. 50-2193.

Respectfully submitted,



Cathy R. Moore
Reg. No. 45,764

ProPat, L.L.C.
425-C South Sharon Amity Road
Charlotte, NC 28211-2841
Telephone: (704) 365-4881
Fax: (704) 365-4851
Customer No. 38263

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Claire Wygand